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Defense Information Infrastructure (DII)
Common Operating Environment (COE)

User's Manual (UM)
for the
METCAST Server (MCSRVR) Segment
Release 3.2 Series

17 August 2001

Prepared for:
Space and Naval Warfare Systems Command
METOC Systems Program Office (SPAWAR PMW-155)

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1 SCOPE

1.1 IDENTIFICATION

This Software User Manual (SUM) describes the use of the METCAST Server (MCSRVR) Segment of the METCAST data distribution software, Release 3.2 Series, developed by Fleet Numerical Meteorology and Oceanography Center (FNMOC), Monterey, CA. This software was compiled with the Defense Information Infrastructure (DII) Common Operating Environment (COE), software version 4.4. The software runs under the following hardware and operating system:

- Sun Enterprise 250 or higher computer running the Sun Solaris operating system, release 2.8 or higher.

This document has been developed in accordance with the *DII COE Developer Documentation Requirements, Version 2.0.*

1.2 SYSTEM OVERVIEW

METCAST is a standards-based, request-reply and subscription (channel) system for distributing meteorological and oceanographic (METOC) and other information over the Internet using Hyper-Text Transfer Protocol (HTTP) and Multipurpose Internet Mail Extensions (MIME). The METCAST Client provides a graphical user interface (GUI) for requesting METOC data and specifying the timing and frequency of retrievals, and for subscribing to "channels", which are conduits for any type of information. The METCAST Server Segment is responsible for processing requests for data from METCAST Clients, interfacing with a database to attempt to satisfy each request, and formatting the retrieved data as specified in the request before returning the data to the client. The METCAST Client comprises a separate segment.

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2 REFERENCED DOCUMENTS

2.1 GOVERNMENT DOCUMENTS

DDR-2 23 January 1998	*Defense Information Infrastructure (DII) Common Operating Environment (COE) Developer Documentation Requirements, Version 2.0*, Defense Information Systems Agency, Joint Operability and Engineering Organization
Unnumbered 18 June 1998	*Software Requirements Specification for METCAST*, Space and Naval Warfare Systems Command, Environmental Systems Program Office (SPAWAR PMW-155), San Diego, CA
fnmoc_MCSRVR_IP_32Series_ Solaris 17 August 2001	*Installation Procedures (IP) for the METCAST Server (MCSRVR) Segment, Release 3.2 for Solaris*
fnmoc_MDCHNL_IP_12Series_ Solaris 10 August 2001	*Installation Procedures (IP) for the METOC Channels (MDCHNL) Segment, Release 1.2 for Solaris*
fnmoc_MDCHNL_SVD_1200_ Solaris 10 August 2001	*Software Version Description (SVD) for the METOC Channels (MDCHNL) Segment, Release 1.2.0.0 for Solaris*
fnmoc_MDMETC_IP_12Series_ Solaris 10 August 2001	*Installation Procedures (IP) for the METOC Observations Database (MDMETC) Segment, Release 1.2 for Solaris*
fnmoc_MDMETC_SVD_1200_ Solaris 10 August 2001	*Software Version Description (SVD) for the METOC Observations Database (MDMETC) Segment, Release 1.2.0.0 for Solaris*
fnmoc_METCAST_IP_15Series 04 June 2001	*Installation Procedures (IP) for the METCAST Client Segment, release 1.5*
fnmoc_METCAST_UM_1500 04 June 2001	*User Manual (UM) for the METCAST Client Segment, release 1.5*
fnmoc_METCAST_SVD_1500 04 June 2001	*Software Version Description (SVD) for the METCAST Client Segment, Release 1.5.0.0*

ipd4400magridipTES-10 29 January 1999	*Installation Procedures (IP) for the Grid Field Application Program Interface (API) Segment (MAGRID) of the Tactical Environmental Support System (Next Century) [TESS(NC)] Meteorological and Oceanographic (METOC) Database*
ipd4400mdgridipTES-10 29 January 1999	*Installation Procedures (IP) for the Grid Field Database Segment (MDGRID) of the Tactical Environmental Support System (Next Century) [TESS(NC)] Meteorological and Oceanographic (METOC) Database*
ipd4200malltipTES-10 9 October 1998	*Installation Procedures (IP) for the Latitude-Longitude-Time (LLT) Observations Application Program Interface (API) Segment (MALLT) of the Tactical Environmental Support System (Next Century) [TESS(NC)] Meteorological and Oceanographic (METOC) Database*
ipd4300mdlltipTES-10 9 October 1999	*Installation Procedures (IP) for the Latitude-Longitude-Time (LLT) Observations Database Segment (MDLLT) of the Tactical Environmental Support System (Next Century) [TESS(NC)] Meteorological and Oceanographic (METOC) Database*
ipd4200maimgiptes-10 9 October 1998	*Installation Procedures (IP) for the METOC Imagery Application Program Interface (API) Segment (MAIMG) of the Tactical Environmental Support System (Next Century) [TESS(NC)] Meteorological and Oceanographic (METOC) Database*
ipd4200mdimgipTES-10 21 January 1999	*Installation Procedures (IP) for the METOC Imagery Database Segment (MDIMG) of the Tactical Environmental Support System (Next Century) [TESS(NC)] Meteorological and Oceanographic (METOC) Database*
Unnumbered January 2001	*Installation Manual for the Regional Center System, Ashore Version 1.0*

2.2 NON-GOVERNMENT DOCUMENTS

None.

3 SOFTWARE SUMMARY

3.1 SOFTWARE DESCRIPTION

METCAST allows a user to define data requirements (areas of interest, data requirements for each area, and frequency with which data are required for each area) and "subscribe" to the required data. Once a subscription is updated, the specified server will automatically update the data at whatever interval the user has specified. In simpler terms, the user sends the server a "wish list" of data requirements, and the server retrieves the data from its local database and sends it to the client as often as the user wishes.

The METCAST Server (MCSRVR) segment contains a modified version of the Metcast Client segment, which retrieves various types of weather data (model output, observations, and remotely sensed imagery etc), and then inserts the data into the DPSR directory tree. The Metcast Server segment then decodes the data found in the DPSR directory, and stores it in the appropriate location within the database. The METCAST Server segment is then responsible for receiving and decoding user requests (including those for data delivered through channels), retrieving the requested data from the database, packaging it for transmission, and returning it to the requester via HTTP.

3.2 SOFTWARE INVENTORY

A complete inventory of the METCAST Client software is contained in the Software Version Descriptions for the METCAST Server (MCSRVR) Segment, METOC Channels (MDCHNL) Segment, and METOC Observations Database (MDMETC) Segment, listed in Section 2.1.

3.3 SOFTWARE ENVIRONMENT

A complete description of the software environment, and a list of the manuals provided with the METCAST Server Segment software are contained in the Software Version Descriptions for the METCAST Server (MCSRVR) Segment, METOC Channels (MDCHNL) Segment, and METOC Observations Database (MDMETC) Segment, listed in Section 2.1.

3.4 SOFTWARE ORGANIZATION AND OPERATION OVERVIEW

The METCAST Server software consists of three segments:

1. MDCHNL – The METOC Channels segment. This segment contains the Channels database schema and CGI scripts to access channels data.

2. MDMETC – The METOC Observations database segment. This segment contains the Observations database schema and CGI scripts to access observation data.

3. MCSRVR – The METCAST Server segment. This segment consists of CGI scripts and code to process requests, package and return data, access and maintain the TEDS, Channels, and Observations databases, and maintain logs of all actions. The Server segment also communicates with the Retriever from the Client segment, passing it status information as well as retrieved data.

The METCAST Server segment interfaces with the Tactical Environmental Data Server (TEDS), Release 4.1 or higher, to retrieve gridded and observation data. The following TEDS segments must be installed before METCAST Server is installed:

- MAGRID – Grid Field Data API Segment
- MDGRID – Grid Field Data Database Segment
- MALLT – Latitude-Longitude-Time Observation API Segment
- MDLLT – Latitude-Longitude-Time Observation Database Segment
- MAIMG – METOC Imagery Data API Segment
- MDIMG – METOC Imagery Database Segment

Installation procedures for these segments are listed in Section 2. Note that TEDS also requires installation of Informix on the server.

When a request is scheduled, the METCAST Client formulates a request message and forwards it via HyperText Transfer Protocol (HTTP) to the server(s) from which the data are requested. The METCAST Server checks its databases to find out whether it has any new data to fill the request. If not, it returns a message to that effect. If there is new data, the server extracts the data from its database(s), packages it, and returns it to the client.

3.5 MODES OF OPERATION

This section is tailored out.

3.6 SECURITY AND PRIVACY

There are no security and privacy considerations peculiar to the METCAST Server segments.

3.7 ASSISTANCE AND PROBLEM REPORTING

The point of contact for assistance and problem reporting is:

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4 ACCESS TO THE SOFTWARE

4.1 SOFTWARE SETUP

4.1.1 Installation on DII COE Systems

Installation and initial configuration of the MCSRVR software on DII COE systems are covered in the Installation Procedures for the METCAST Server (MCSRVR) Segment, METOC Channels (MDCHNL) Segment, and METOC Observations Database (MDMETC) Segment, referenced in Section 2.1. This procedure uses the DII COE Installer software.

4.1.2 Installation on Non-DII COE Systems

Installation and initial configuration of the MCSRVR software on non-DII COE Sun Solaris systems are covered in the Regional Center Installation Manual, Ashore version, referenced in Section 2.1. This manual covers installation and configuration of Informix, which is necessary for the METCAST Server installation, and installation and configuration of METCAST Server and the web server from a TAR file.

4.1.3 Familiarization

METCAST Server is designed as a “start it and forget it” process. Once started, it continues to run as long as the system stays up, receiving and processing requests from METCAST Clients. Few user interactions are required.

4.1.4 Access Control

To start a METCAST Server session on DII COE installations, you must be able to log in as sysadmin. Generally, the System Administrator, who also controls granting of the sysadmin password, performs this action.

4.2 INITIATING A SESSION

In non-DII COE installations, the installation procedure installs startup scripts that automatically start METCAST Server each time the system is restarted.

In DII COE installations, the METCAST Server is generally started manually. Users wishing to automate start up of the MCSRVR Decoders in a DII COE environment should read the Readme file (Scripts/README FILE)

For initial installations of the MCSRVR Segment, the following directions apply. For subsequent MCSRVR restarts where Areas and Lists have already been defined and Scheduled, skip to step 4. Step 8 may also be omitted if the defined Areas and Lists do not need modification.

1. Reboot the computer. To do this, click on **Hardware** on the menu bar, then select **Reboot System** from the menu that drops down. If a confirmation dialog appears, confirm that you want to reboot.

2. Log in as dbadmin.

3. Ensure that the Informix server is running. Click on **Database Control** on the menu bar, and select **Server Control** from the drop-down menu. If the dialog that appears says that Informix server is DOWN, click on the Start Server button. This should start the Informix server, and the dialog should say the server is UP. When the server is up, close the dialog.

4. Log out and log in as **ingest.**

5. Open an xterm window (See Section 5.2).

6. Type **ls** at the xterm window command prompt to display the associated MCSRVR program files.

7. Four of the displayed programs must be started manually; these are listed below. Type the following commands in sequence to start the programs. For an initial installation of the METCAST Server Segment, it is necessary to start all four programs. For subsequent Server startup (after Data Areas and Lists have been defined and scheduled as described in step 8 below), only the first 2 programs are required to start the download of data for the scheduled Areas and Lists.

    a. Type **`./MCloadService`** to start the Service background processes.

    b. Type **`./MCInit`** to initialize the Service background processes.

    c. Type **`./MCClient`** to start the Metcast Client for Servers GUI, which is used to define Areas and Lists, select products for those Areas/Lists, and to configure the data retrieval parameters.

    d. Type **`./MCMonitor`** to start the Metcast Retriever Monitor, which is used to monitor data retrieval status.

8. The Metcast Client for Servers Segment, which is incorporated into the MCSRVR Segment, must be configured to retrieve data (model output, imagery, observations etc) that is decoded by the MCSRVR Segment and then stored within the database. Geographic areas of interest must be defined, the products available for those areas must be selected, and finally, the retrieval preferences (when and how often data shall be requested) must be configured.

   For detailed instructions on setting up data retrievals via the Metcast Client for Servers GUI, refer to the ***Metcast Client Users Manual (fnmoc_METCAST_UM_15)***. Refer specifically to the Sections listed below:

   IMORTANT NOTE: Right clicking in rapid succession within Metcast Client on a Sun Solaris Server will cause a system crash (An example of this would be to right click on a

defined area to display the popup menu and then selecting Schedule. If the user quickly right clicks on another defined area before the first area is scheduled, the system will crash). This is a known feature of the XVT/XWindows in the Sun Solaris operating system. To help ensure uninterrupted system operation, users should not "click ahead" of the software. It is recommended that users wait for a software function or operation to complete before initiating the next mouse click.

The screen shots displayed in the Metcast Client Users Manual were captured on a Windows NT system and therefore look slightly different than those on the Solaris Operating System. The functionality, however, remains the same.

Section 5 – Using Metcast Client, Provides instructions on how to set up the various areas and lists, products and retrieval parameters.

Section 5.1 – The Basics, describes how to set up the Metcast Clients Requestor to schedule data retrievals. Note that Step 7 – Displaying Products, does not apply to Server applications.

Section 5.2 – Server Setup (The Options Menu), describes the process of setting up the connection to the data server (source) from which raw data will be retrieved and then fed to the MCSRVR Segment for decoding.

Section 5.3 – Defining, Selecting, and Managing Areas, describes how to set up and manage areas of interest for which data will be retrieved. The *Remote Link* Area selection is a Windows NT function and as such does not apply to Server applications.

Section 5.4 – Selecting Products for Retrieval, describes how to select products for each of the defined areas.

Section 5.5 – Setting Up Requests, describes how to configure the retrieval (request) options for the defined areas and products.

Section 5.6 – Setting up Lists, describes how to select non-geographical text data such as surface observations and bulletins for download. The *Remote List* selection is a Windows NT function and as such does not apply to Server applications.

Section 5.7 – Scheduling an Area or List, describes how to activate (schedule) the retrieval of products selected in the defined Areas and Lists.

Section 5.8 – Displaying the Status of a Retrieval, describes how to use the Metcast Retriever Monitor (started in step c above), and the Area Status List to view and monitor the status of the scheduled retrievals.

After using the Metcast Client GUI and the Metcast Retrieval Monitor GUI, you may close the GUI's, and the programs will continue to operate in the background.

At this point, after setting up and *S*cheduling the defined Areas and/or Lists, the requested data should be actively downloading via the Metcast Client Requestor into the DPSR directory. The remaining steps below will start the MCSRVR decoders and begin the ingest process.

9. Log out and log in as Web.

10. Open an xterm window.

11. Type: **cd $Seg/Scripts**

12. Type: **./task.ksh** to display a list of options. Select **Start All Decoders.** The MCSRVR decoders will then search the DPSR directory for the presence of downloaded data, and if found, will decode that data, write status to the appropriate log file and then pass the decoded data to the appropriate location within the database.

13. Monitor the **decoder** and **grid** logs by choosing the appropriate selection from the options list (**Examine decoder log**, or **Examine grid log**). When the decoders are running, data will scroll quickly on the screen until all of the downloaded data has been decoded. When the decoders have completed processing all of the available data, the data stream will pause and the following statement will often appear: " Load complete at <current date and time>". Type **Ctl-C** at any time to exit the log files.

14. As soon as the decoder and grid logs have paused, you may publish a Dynamic Product List (DPL) by selecting **Publish Dynamic Product List** from the options list described in step 12.

15. User web is responsible for various background tasks using the system scheduler, **cron**. The tasks are compiled into the file scripts, **crontab.web** and are initialized by typing the following command: **$ crontab crontab.web**. One of the automatic background tasks initialized by this command is the periodic publishing of the Dynamic Product List.

16. Log out as user Web.

4.3 STOPPING AND SUSPENDING WORK

To stop the server in a DII COE installation:

1. Log in as Web.

2. Open and xterm window.

3. Type **cd $Seg/Scripts**

4. Type: **./task.ksh** to display a list of options. Select **Stop All Decoders.** This stops the decoders, which essentially turns off the server.

5. Log out as Web.

5 METCAST SERVER PROCESSING GUIDE

As previously mentioned, the operation of METCAST Server is largely transparent to the user and requires almost no user interaction once the METCAST Client for Servers has been properly configured to retrieve data for the MCSRVR Segment. Information concerning the server's operations is sent to logs that can be reviewed by Systems Administrators and/or software engineers if problems arise.

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6 NOTES

6.1 GLOSSARY OF ACRONYMS

COE	Common Operating Environment
DII	Defense Information Infrastructure
DoD	Department of Defense
FNMOC	Fleet Numerical Meteorology and Oceanography Center
HTML	HyperText Markup Language
HTTP	HyperText Transfer Protocol
IP	Installation Procedures
MCSRVR	METCAST Server Segment
MDCHNL	METOC Channels Segment
MDMETC	METOC Observations Database Segment
METOC	Meteorology and Oceanography
MIME	Multi-purpose Internet Mail Extensions
SPAWAR	Space and Naval Warfare Systems Command
SUM	Software User's Manual
SVD	Software Version Description
TAC	Tactical Advanced Computer
TEDS	Tactical Environmental Data System
UM	User's Manual

6.2 KNOWN PROBLEMS AND WORKAROUNDS

Metcast Client for Unix Servers: The speed with which mouse inputs are made in the Metcast Client for Unix may cause problems and hang-ups. In general, fast single or double clicking ahead of the Client program with either the left or right mouse buttons may cause a hang up or other problem. Users should not click ahead of the Metcast Client program, but wait for the Client to complete the requested action before initiating (clicking for) the next action.

7 DOCUMENTATION IMPROVEMENT AND FEEDBACK

Comments and other feedback on this document should be directed to the DII COE Hotline:

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